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Joint Experimentation—

Unlocking the Promise of the Future

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By DAN COATS

While everyone agrees that the Cold War has ended, we have yet to achieve a consensus on future military capabilities and the defense policies needed to realize them. The Quadrennial Defense Review (QDR) concluded that we should pursue a balanced force structure in the near term but did not set priorities for developing new capabilities. While there is a template in *Joint Vision 2010* to guide this quest it has failed thus far to effectively focus development efforts since it is regarded as being all things to all people. Consequently, those of us on Capitol Hill are presented with a range of competing approaches to future warfare. Some advocate precision strike by airpower and others argue for decisive landpower while still others favor rapid dominance that destroys an enemy's will to resist. The list goes on and on. The problem is that each approach requires a radically different investment policy, organizational structure, and doctrine. How can Congress determine which of these various approaches is best suited for the battlefield of the next century?

Defense planning guidance soon will appear for the preparation of programs which extend all the way to 2005. Yet it will be drafted without benefit of an overarching joint process to prepare the Armed Forces for the future. I doubt this guidance will accelerate or terminate programs in order to prioritize the development of warfighting capabilities. Without a coherent process on which to base such critical decisions, the Pentagon is likely to default in favor of bureaucratic processes which stifle change. Given this situation many observers claim that we are sustaining a Cold War defense establishment which is partly a military anachronism and partly a domestic jobs program.

true advances in operational concepts are likely to be joint

In a farewell speech before the National Press Club, General John Shalikashvili stated that "our Nation has never been more secure" and that the delta between U.S. defense capabilities and those of any other nation is greater today than at any time during his career. However, the challenge lies in evolving joint warfighting capabilities to maintain that delta under future Chairmen. This may be the most pressing national security challenge Congress faces today.

The real issue, then, involves developing a means to determine how much of what is enough by when in order to achieve the objective of full spectrum dominance in the 21st century. While implanting information technology in extant organizations and operational concepts is important, I believe that only by integrating such technology with changes in organization and doctrine, based on truly joint concepts, can our capabilities be maximized. It was this type of integration that made *Blitzkrieg* and carrier aviation revolutionary—new technology used in new ways with new force structures.

During the 1930s, combat aircraft, tanks, and radio communications were available in both France and Germany. But through the efforts of von Seekt and Guderian, the Germans leveraged them with new organizations and doctrine to develop more effective warfighting capabilities. Thus the development of *Blitzkrieg* offers insight into creating change. Today we have a different set of innovations—Internet data transfer, stealth, precision munitions, space-based communications, and others. The true advances in operational concepts enabled by this technology are likely to be joint and may not be fully appreciated as yet. Consequently, the transformation from post-Cold War to information age capabilities cannot be relegated to decentralized service prerogatives.

The Honorable Dan Coats represents the State of Indiana in the U.S. Senate and chairs the AirLand Subcommittee of the Armed Services Committee.

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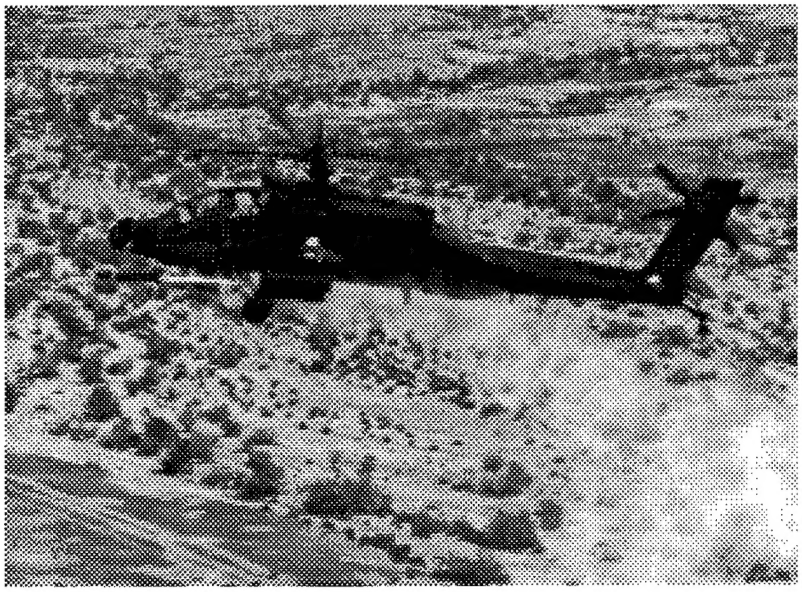


McDonnel Douglas

AH–64 firing Hellfire missile.

Rather, it is a joint challenge to be resolved with joint processes that drive decisionmaking. Perhaps it is time to establish a joint force specifically charged to experiment with employing new technologies, in new ways, under new organizational structures as a means of finding those genuine leaps ahead in warfighting capabilities.

The Congress is also confronted with a striking dichotomy of views on the scope, pace, and approach to this military transformation. Secretary of Defense William Cohen testified that we cannot transform our military without base closings and defense infrastructure reform, while the new Chairman, General Hugh Shelton, advocates an incremental crawl-walk-run approach that takes until 2004 to produce capstone joint experiments. On the other hand, the National Defense Panel (NDP) vigorously argued that challenges in the early 21st century may place this Nation's security at far greater risk than we face today. Correspondingly, they recommend fundamental change by creating a Joint Forces Command with the mission, forces, and resources needed to drive this transformation through joint experimentation. The NDP report indicated that the need and timing for establishing this transformation process is "absolutely critical" and "urgent."

The United States has been unprepared at the outset of wars in its past. Our Nation rallied to eventually overcome these threats, but at a cost—not only in fiscal terms, but in lives. In the very near future, technology will enable a different range of threats we must be prepared for. There is no more pressing issue than the stewardship of our military capabilities to meet the national security requirements of the next century.

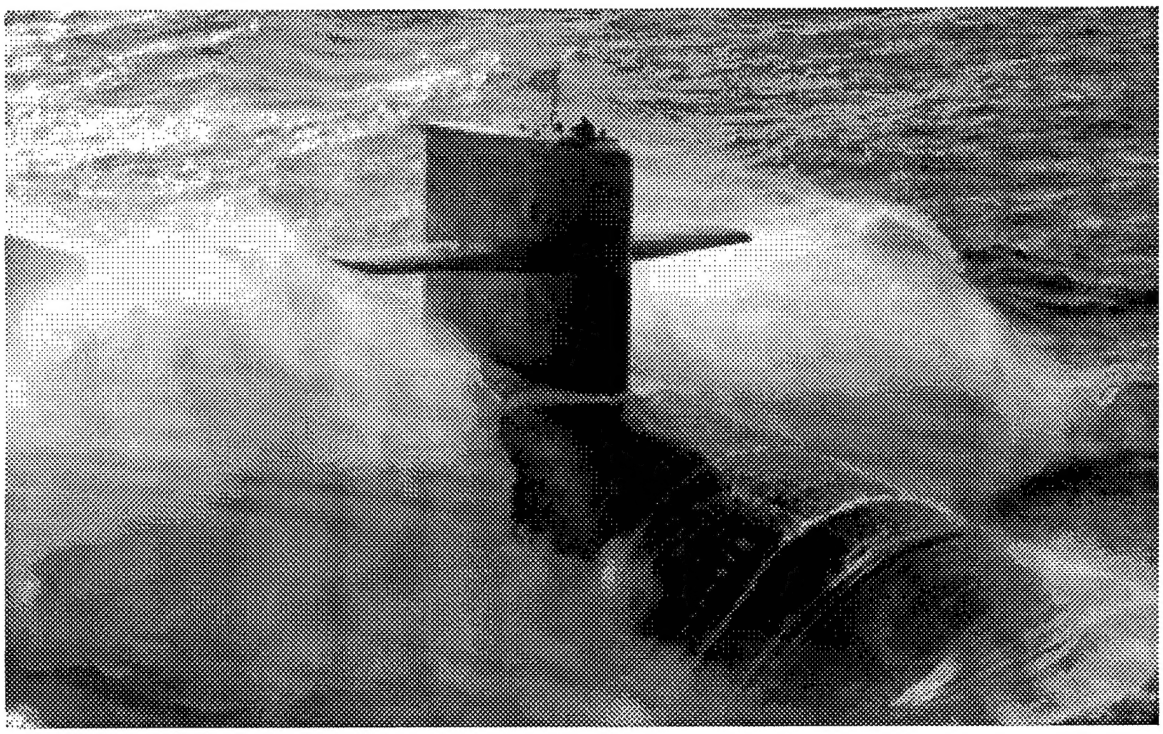
This article offers a congressional perspective on this joint challenge that introduces factors to drive development of warfighting capabilities, discusses uncertainties associated with competing operational approaches, and provides ideas on the process of joint experimentation.

Development Factors

Future military capabilities should be shaped by three factors: an assessment of the enemies we are likely to face; the technology that will enable us to employ military force in new, more effective ways; and the fiscal resources we invest for national defense.

The QDR report concluded that the world will remain a dangerous place with a full spectrum of uncertainties and evolving threats including weapons of mass destruction, information operations, and an array of asymmetric means to exploit our operational vulnerabilities. Many of these threats will be enabled by commercial-off-the-shelf technologies even more advanced than those fielded by our forces. Future capabilities must be developed to address these probable threats to U.S. interests in the 21st century. But how should we sort through all the different opinions to determine which threats matter? Clearly we need an overarching process to prioritize which threats must be addressed first, which can wait, and which do need not to be addressed at all. Notwithstanding these threats, many argue that we may be in the midst of a strategic pause since there is no regional or global peer competitor on the horizon. This pause does not imply that the Armed Forces are not busy, but rather that America has a historic opportunity to militarily prepare now for an uncertain future.

A second component driving development of future capabilities is the promise of advanced technology—things that are achievable by virtue of technological enhancements. Technology already provides significant advances in collecting information, processing it to gain situational awareness, communicating this awareness throughout our joint force, and responding with precise, accurate, and effective combat power. Thus we have the potential to increasingly coordinate activities across widely dispersed forces operating at higher speeds and tempos over greater distances. Advances in technology drive competition among capabilities that shape our vision of future warfare, including anti-access capabilities versus force projection, information operations versus precision strike, and missiles versus active defense. But how should we assess the outcome of these and other choices to highlight which technological opportunities will provide leap-ahead capabilities?



***USS Maine* conducting surface navigation operations.**

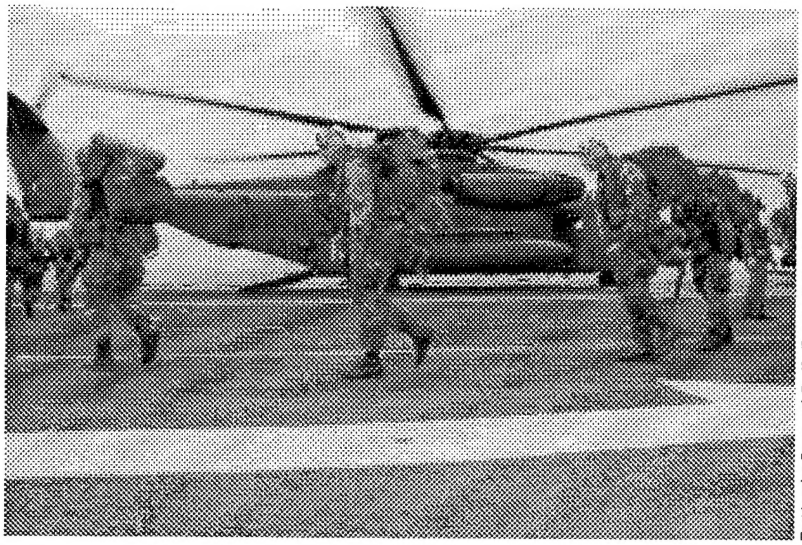
Yet we cannot address each and every threat. And we cannot have all the potential technology since the development of future capabilities is limited by a third factor—fiscal resources available for defense. The budget resolution concluded last summer provides about $260 billion annually in real terms through 2003. The QDR report indicated that this level of funding is adequate to reach the defense procurement goal of approximately $60 billion annually, but only as long as infrastructure, manpower, and operational reforms are undertaken. Thus far Congress has failed to support more base closings, depot reform, and other efficiencies. Consequently procurement will likely languish in the $50 billion range, virtually ensuring that all the major systems currently proposed by the services cannot be procured. Yet given this environment, what will drive the cross-service trade-offs to prioritize investments in those areas that will make a difference on the next century's battlefields?

The threat and technological and fiscal factors can be addressed by an array of evolving warfighting paradigms. But how do we determine which paradigm provides the utmost in enhanced capabilities? No briefing on the value of paper systems and computer simulations will ever answer this question. I would suggest we augment the efforts of think tanks, white papers, and slide transparencies with something real: a process of joint experimentation using real joint forces, with real systems, exercising force-on-force in a real joint battlespace to determine what goes first, what must wait, and what gets terminated in developing our future capabilities.

Competing Paradigms

Unfortunately, we are not on a course toward making these decisions. The QDR process addressed only separate service experimentation initiatives such as *Force XXI* in the Army, the network-centric warfare concept in the Navy, *Sea Dragon* in the Marine Corps, and Air Force battle labs. In large part these initiatives are not joint or experimental. Yet despite the publication of *Concept for Future Joint Operations,* there is little meaningful discourse on a joint process that is either in place or on the drawing board to drive the implementation of *Joint Vision 2010.*

Without such a joint focus we will face operational approaches which are uncomplementary substitutes and which need radically different investment strategies. But the reality of budget constraints is that we cannot afford to pursue every investment strategy. Moreover, we have little if any fiscal maneuvering room for error in selecting which systems and capabilities to pursue. As Chairman of the AirLand Subcommittee, let me introduce two diametrically opposed visions—airpower versus landpower—which members of Congress need help to sort out.



Fleet Imaging Command, Pacific (Douglas S. Bean)

Marines preparing to embark on CH–53E.

Airpower. Some observers advocate relying on air and space capabilities to control a potential enemy through situational awareness, global reach, and precision strike. They argue that we can contain massive land assaults with bombers, tactical aviation, and missiles while reducing enemy strength so profoundly that large ground counteroffensives will never be required. This approach has major implications: increased airpower investment, downsized land forces, and new joint concepts through which land forces support decisive air operations by herding targets, securing the front, and mopping up the battlefield.

However, there is no consensus even among ardent airpower advocates on this approach. Current DOD efforts appear to emphasize short-range tactical fighters over bombers and missiles. Others advocate increases in stealthy long-range bombers since their global response capability can support the halt of armored forces and swing between two major theater wars while requiring no forward basing. Still others argue that the combination of long-range bombers and naval carrier groups will have increasing value as complementary deterrent and warfighting assets and that the role of land-based fighters will diminish because of their reliance on access to in-theater basing and its associated vulnerability to force protection threats.

the fog of war cannot be effectively penetrated by fixed-wing platforms

But critics doubt that airpower can do the job. Can it decisively engage the broad range of targets we may face? They argue that airpower has never been decisive despite great success in the Gulf War. They claim that employing it effectively in the open deserts of Southwest Asia may be far more basic than "containing" disjointed infiltrating forces on the Korean peninsula or in Bosnia. And we must remember that even during the most favorable conditions of Desert Storm we could not destroy Iraqi Scuds. If an enemy masses its formations deep in the battlespace and segregates them from its populace, airpower may work wonders. However, an enemy is likely to disperse its forces to put fewer platforms in the submunition footprint of our precision weapons. This tactic can exhaust our inventory of preferred munitions or expend them at uneconomical rates.

Furthermore, an enemy may mix combatants and noncombatants within the effective radius of our weapons and put the United States in a position of inflicting unacceptable collateral damage. Through 2010 our integrated joint C⁴ISR process may still be unable to definitively distinguish between friend, foe, noncombatant, and decoy partly because our sensors will continue to generate information faster than we can fuse and analyze it. Consequently, the fog of war will persist. And it cannot be effectively penetrated from above by fixed-wing platforms traveling at great speed. Therefore, our lack of assured battlespace awareness may continue to frustrate our ability to employ airpower to destroy anything other than fixed sites which an enemy would probably know was to be attacked.

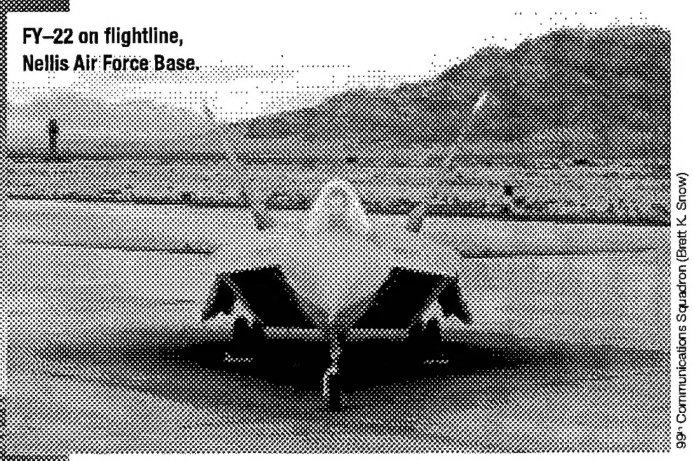
Therefore, we must jointly experiment to determine whether our intelligence system, when coupled with our targeting and mission planning processes, is robust and reliable enough to support this airpower approach. If it can, then perhaps we should pursue more bombers and expeditiously reassess the over $300 billion we plan to spend on tactical fighters or landpower enhancements. But if it cannot, then we may never be able to differentiate let alone employ airpower to engage moving targets. Airpower thus cannot be decisive and we should emphasize investments in landpower.

Landpower. On the other hand, landpower proponents point to experiences in Desert Storm and Joint Endeavor and argue that on-the-ground staying power, either real or perceived, is needed to compel an enemy to accede to our strategic objectives. They envision employing ground forces to conduct dominant maneuver as a means of gaining a positional advantage which enables the use of decisive force in attacking enemy centers of gravity. This compels an enemy to either react from an untenable position or surrender.

Like airpower advocates, landpower proponents pursue several organizational approaches. The *Force XXI* initiative retains heavy divisions of over 15,000 soldiers. Others argue the Army should be reorganized into smaller, faster, more deployable, and more lethal units. They propose

DOD (Helene C. Stikkel)

Paladin weapon system.



99th Communications Squadron (Brett K. Snow)

FY–22 on flightline, Nellis Air Force Base.

separable, information-enabled, high technology combat groupings of 5,000 soldiers. Still others are considering combat teams that can call upon an enhanced array of joint fires. This decision over ground warfighting organization is not solely an Army or Marine decision. Rather, it is a matter of jointly organizing landpower with air and seapower to achieve full spectrum dominance.

But critics question whether landpower can achieve positional advantage. Why are we confident that land forces will be assured access to forward regions when adversaries are likely to employ cruise missiles, deep-water mines, and other anti-access means to disrupt strategic deployments? In the future we are unlikely to have six months to build up our land forces as we did during Desert Shield. And even if we gain access to a region, could we deploy heavy, logistics-intensive Army divisions fast enough to be viable on tomorrow's battlefield? Moreover, once in theater, would such forces and associated immobile support and command centers be able to conduct high speed, high tempo operations to lessen vulnerability to precision strike, information operations, and other asymmetric threats? If not, then perhaps we should pursue new, smaller organizations such as combat groups to enhance deployability, agility, and survivability.

Landpower skeptics criticize this approach since it may constrain the potential effectiveness of airpower. Why should we hold back airpower capabilities for weeks or months while building up heavy ground forces for a decisive counteroffensive that may not be necessary? Again I would suggest that we must jointly experiment to determine whether landpower can overcome challenges in strategic deployment, operational mobility, and full dimensional protection. If it can, then we should rapidly increase Army and Marine Corps budgets to recapitalize antiquated ground systems. But if it cannot, then dominant maneuver will remain an illusion and we should invest in airpower.

Both the airpower and landpower approaches raise several key questions. And each implies significant shifts in defense investment. Yet the reality is that we simply cannot afford both approaches by 2010. So the issue is whether technological benefits, when coupled with changes in force structure and doctrine, decisively enhance either of these paradigms or require us to examine a completely different approach. We must realize that insights from service initiatives cannot be the only basis for addressing this issue since they are focused on different problems and use different scenarios, threats, conditions, and enablers. So how do we sort through their conflicting conclusions? More fundamentally, how do we determine which even addresses the right set of problems? Only a coherent process of joint experimentation will provide policymakers and senior officers with the insights to address this issue. Without it, the Air Force will argue for increased investment at the expense of Army and Navy programs and vice versa. This is not the recipe for implementing *Joint Vision 2010*.

Experimentation Process

If we do not put an overarching process in place very soon, we will fail to motivate the tough decisions necessary to accelerate procurement in systems that are really needed and cancel or stretch ones that are not in order to realize the joint vision. I believe a joint experimentation process can serve as the basis for investment decisions both in the Pentagon and on Capitol Hill. At a minimum, this process should incorporate organizations, facilities, resources, and common terminology.

First we need a viable organization for joint experimentation with someone clearly in charge and with the authority to make changes. While this could be the commander in chief of U.S. Atlantic Command, the process of developing future capabilities is momentous enough to consider designating a new CINC, with responsibility for joint experimentation, training, and doctrine, such as the "Joint Forces Command" recommended by the National Defense Panel. Various organizations may work as long as they ensure the habitual association of forces from all the services which are focused, equipped, and resourced for experimentation. The force must be equipped with advanced technology in a way that is both jointly synchronized and fenced. Moreover, this experimentation force must possess or have ready access to all operational and tactical joint enablers which might be used in a battlespace, such as intelligence, surveillance, and reconnaissance (ISR), C⁴, logistics, and force protection. Some have proposed a standing JTF with rotational lead among the services. This approach may work if each service pays attention to it when not in charge—but, for example, would the Army heed the conclusion of an Air Force-led JTF that divisions should be reorganized into smaller combat elements? Accordingly, some advocate a larger vanguard force that incorporates three star-level organizations from every service—an Army corps, numbered Navy fleet, Marine expeditionary force, and numbered Air Force. These vanguard commanders could undertake a series of experimentation initiatives at varied echelons and establish JTFs from their assets for exercises. Either approach might work given the firm commitment and leadership of the Secretary of Defense and Joint Chiefs.

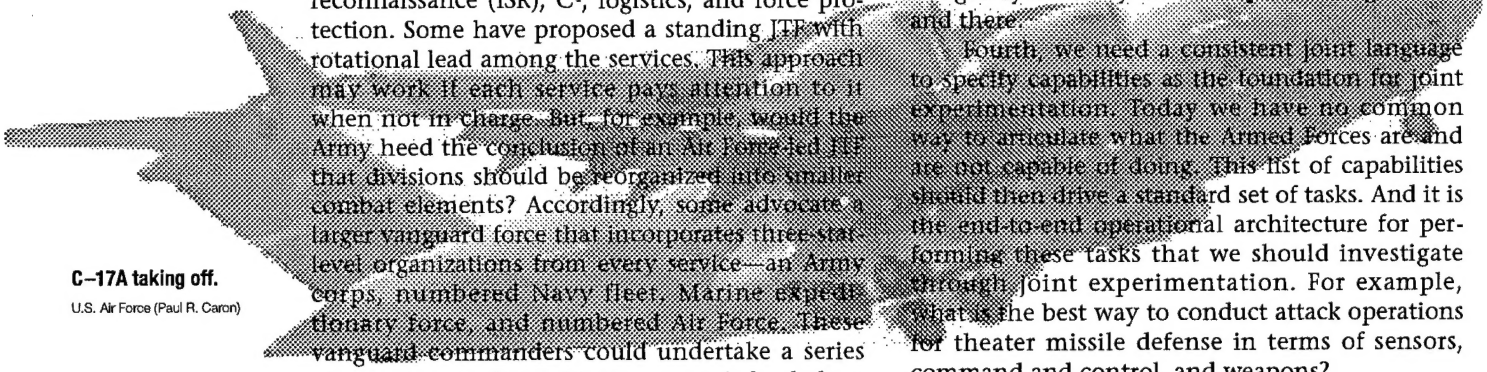
joint training* is not *joint experimentation

Second, we should instrument and electronically link a complex of service training sites to provide a joint facility for experimentation which could employ the suite of joint operational and tactical C⁴ISR, logistics, and other enablers to produce valid conditions for field experimentation. This would offer the capability, for example, to determine whether dominant battlespace awareness can be actually achieved. Furthermore, this complex would form the basis for joint force-on-force experimentation to investigate enemy reactions to new paradigms of warfighting by understanding our operational vulnerabilities. For instance, how would an Air Force-led JTF attack *Force XXI*? It is through such exercises and the resulting knowledge that we can develop the means to avoid, mitigate, and counter enemy reaction to advanced capabilities. In short, this netted underpinning could enable the Joint Chiefs to obtain the kind of data necessary to assess capabilities, address vulnerabilities, and unlock the future promise of technology.

Third, the joint experimentation process must be adequately resourced. Funding should be fenced by DOD and not reallocated to pay bills during the budget review. In this vein, I agree with the NDP recommendation that a major force program be established to fiscally support the CINC with the mission of joint experimentation, such as that provided to U.S. Special Operations Command. These funds should not only provide for operations and support, but also serve as a reserve to quickly integrate or develop system enhancements based on experimentation insights. For example, this reserve could be invested in doubling the bandwidth of a battalion commander's Abrams tank if experimentation demonstrated the need for such a capability. Such initiatives cannot be postponed until the next DOD budget cycle. They must be pursued right then and there.

Fourth, we need a consistent joint language to specify capabilities as the foundation for joint experimentation. Today we have no common way to articulate what the Armed Forces are and are not capable of doing. This list of capabilities should then drive a standard set of tasks. And it is the end-to-end operational architecture for performing these tasks that we should investigate through joint experimentation. For example, what is the best way to conduct attack operations for theater missile defense in terms of sensors, command and control, and weapons?

One further point: *joint training* is not *joint experimentation*. While current exercises provide unified commands with superb opportunities to enhance readiness today, they do not investigate the potential for tomorrow's revolution in military affairs. We need training and experimentation to realize the shape-respond-prepare strategy outlined in the QDR report. It is the purpose of joint experimentation to validate those capabilities that are on track, find those that provide leaps ahead, and determine those that are failures. It is essentially a process of identifying winners and losers across



C–17A taking off.
U.S. Air Force (Paul R. Caron)

platforms, systems, and operational concepts. And we must be committed to accelerating winners and terminating losers. Some will consider the cost of these failures wasteful. But to the contrary, identifying failure is successful experimentation. True failure would mean continuing to invest in systems before knowing what will or will not work on the battlefield of the next century.

Simply put, the joint construct for experimenting with technologies, operational concepts, and force structures to discover true advances in warfighting capabilities is poorly acknowledged and resourced. How are we determining the transformation strategy that bridges our forces from current capabilities to a revolution in military affairs? The Secretary and Chairman must provide guidance and leadership to develop a process that breaks down bureaucratic barriers and explores ways to achieve full spectrum dominance. The joint experimentation construct presented here can identify technologies, systems, and organizational changes that should be accelerated, and perhaps more importantly, those that should be divested. The latter will provide fiscal fuel in a flat defense budget to accelerate the development and fielding of advanced technologies.

Establishing this experimentation process will be difficult since the services jealously guard dwindling force structures, systems, and platforms. But we cannot let experiments take a back seat to service initiatives on future capabilities. We may find the key to future capabilities is not only in tanks, ships, and aircraft they advocate, but in communications, intelligence, and other enablers. If so, we need a joint process to tell us which programs should be slowed or terminated, as well as the joint courage to shift budgets to accelerate genuine advances in warfighting. The ultimate test of jointness may be that the services will lose discretion over major investment decisions. But without such jointness each service may partially implement its stovepiped solution and thus deny us a coherent joint operational concept for the future.

This is not meant to discourage interservice competition. Rather, we should foster it within a framework of joint experimentation that answers some of the troublesome questions posed here. For example, the issue of whether airpower can be decisive in the containment phase of a conflict is so critical that it cannot be resolved through interservice bickering over the results of simulations. We need to jointly demonstrate whether this concept is viable since it will help us determine where, when, and how our limited defense resources should be invested.

Congress has taken a first step, though admittedly small, in highlighting this debate on the development of new capabilities. The Senate Armed Services Committee directed in the *Report on the National Defense Authorization Act for Fiscal Year 1998* that the Secretary, in consultation with the Chairman, review service experimentation efforts and submit an experimentation plan aimed at rapidly conceptualizing and developing forces and operational concepts that will be needed through the 2010 time frame (five specific provisions are shown in the accompanying list).

Our second step will be to consider legislation in the defense authorization for fiscal year 1999 based on the Secretary's joint experimentation plan and the recommendation of the National Defense Panel.

In closing I am struck by the words of General Malin Craig who, as Chief of Staff of the U.S. Army in 1939, reflected on the lost opportunity of the interwar period:

What transpires on prospective battlefields is influenced vitally years before in the councils of the staff and in the legislative halls of Congress. Time is the only thing that may be irrevocably lost, and it is the first thing lost sight of in the seductive false security of peaceful times. . . .

We too may live in such times. Yet we must accept that the fate of democracy may be in our hands. We need courage to push through this false security and prepare for the future. We must not squander this strategic opportunity to develop new capabilities that can shape the 21st century. **JFQ**

This article is a revised and updated version of a presentation made at a conference on "Preparing Now—Alternative Paths to Military Capabilities for an Uncertain Future" sponsored by the Institute for Foreign Policy Analysis in Washington on October 2, 1997.

Joint Experimentation Plan

The report should be submitted by March 30, 1998 and address the following:

1. How the fielding of advanced technologies is being synchronized across the military services to enable the development of new operational concepts.
2. How command, control, communications, and computer (C^4) and intelligence, surveillance, and reconnaissance (ISR) capabilities are being integrated jointly to achieve information superiority.
3. How service experimentation is being linked with the joint experimentation plan designed to implement the *Joint Vision 2010* operational capabilities.
4. How vulnerability assessments of new technologies are being conducted.
5. Whether an experimentation Joint Task Force should be established.

—*Report on the National Defense Authorization Act for Fiscal Year 1998*

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